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Oak Ridge National Laboratory



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Health Physics Division

OAK RIDGE NATIONAL LABORATORY

CENTRAL FILES NUMBER

49-5- 33

Subject: Liquid Waste Disposal, Week Ending April 17, 1949

Report No.: ASI-526-49

Author: W. D. Cottrell

Date: May 3, 1949

*3/6*

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**Liquid Waste Disposal**  
**Week Ending April 17, 1949**

**A. Salient and Non-Routine Items**

Composite samples of both the Settling Basin and White Oak Lake effluents are being prepared on a routine basis with complete radiochemical analyses being made when the gross activity is sufficiently high to warrant such.

**B. Statistical Data**

**1. Curies Discharged**

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	38.29	16.88	55.17	23.28	12.40	35.68
Deviation From Last Week	+16.0%	+17.2%	+16.6%	+28.4%	-33.0%	- 2.7%
Deviation From Ave. of 4 Week Period Ending 4-3-49	+33.4%	+56.6%	+40.0%	+9.3%	-17.3%	-12.8%
Probable average concentration in Clinch River:	9.9 $\mu$ ci/lr					

**2. Submersion Data**

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>(mr(ep))/hr</u>
This Week	2.60	3.06	5.66	0.06	0.08	0.14
Deviation From Last Week	+5.3%	+17.3%	+11.5%	+4.3%	-21.8%	- 8.8%
Deviation From Previous 4 Weeks	+5.8%	+ 9.7%	+ 7.9%	-2.0%	-13.2%	-13.5%

**C. Supplementary Reports**

No special reports this week.

WDC:cs

*W. D. Cottrell*  
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\*Calculated using as a dilution factor the ratio of the average discharge from White Oak Lake to the average flow of Clinch River during this period.

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Oak Ridge National Laboratory

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Health Physics Division

Subject: Liquid Waste Disposal, Week Ending May 1, 1949

Report No.: ASI-625-49

OAK RIDGE NATIONAL LABORATORY  
CENTRAL FILES NUMBER  
49-5-67

Author: W. D. Cottrell

Date: May 6, 1949

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# Liquid Waste Disposal

Page 3

## B. Statistical Data (cont'd)

### 3. Submersion Data

#### Settling Basin

	Beta <u>mrep/hr</u>	Gamma <u>mr/hr</u>	Total <u>ar(ep)/hr</u>	Beta <u>mrep/hr</u>	Gamma <u>mr/hr</u>	Total <u>ar(ep)/hr</u>
This Week	1.50	1.85	3.35	0.038	0.042	0.080
Deviation From Last Week	-36.4%	-27.7%	-31.9%	-13.6%	-17.6%	-15.8%
Deviation From Previous 4 Weeks	-44.2%	-36.4%	-40.2%	-17.4%	-43.4%	-38.0%

## C. Supplementary Reports

No special reports this week.

*W. D. Cottrell*  
W. D. Cottrell

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**Liquid Waste Disposal**  
**Week Ending May 1, 1949**

**A. Salient and Non-Routine Items**

The problem of providing for a common outlet for all hot wastes going into White Oak Creek has been placed in the hands of the Engineering Division for preliminary design and cost estimates. If all liquid wastes enter White Oak Creek through one common outlet it will enable us to more accurately determine the total amount of radioactivity entering the creek.

During the flood of April 28th, the White Oak Lake overflowed the sheet piling of White Oak Dam. This overflow was sampled at two hour intervals until the water subsided below the piling. This data is being presented in a separate report.

**B. Statistical Data**

**1. Curies Discharged**

	<u>Settling Basin</u>			<u>White Oak Dam</u>		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	32.82	15.36	48.18	27.88	10.45	38.33
Deviation From Last Week	+6.77%	-10.6%	+1.94%	+146.0%	+135.9%	+143.2%
Deviation From Previous 4 Weeks	-5.82%	-17.9%	-9.79%	+24.7%	-26.5%	+4.6%

**2. Probable Average Concentration in Clinch River\***

This Week	$7.0 \times 10^{-7}$ $\mu\text{c/cc}$
Deviation From Last Week	-49.0%
Deviation From Previous Four Weeks	-34.6%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Oak Ridge National Laboratory

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Health Physics Division

OAK RIDGE NATIONAL LABORATORY

CENTRAL FILES NUMBER

49-5-39

Subject: Liquid Waste Disposal, Week Ending April 24, 1949

Report No.: ASI-527-49

Author: W. D. Cottrell

Date: May 4, 1949

*2/8*

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Chief, Declassification Branch *98*

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Liquid Waste Disposal  
Week Ending April 24, 1949

A. Salient and Non-Routine Items

One composite sample each of the Settling Basin and White Oak Lake effluents were delivered to the 205 RCA Laboratory for radiochemical analysis.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	30.74	14.94	45.68	11.33	4.81	16.14
Deviation From Last Week	-15.3%	-11.8%	-14.1%	-51.3%	-61.3%	-54.5%
Deviation From Previous 4 Weeks	-10.3%	- 6.6%	- 9.1%	-58.9%	-74.2%	-65.0%

2. Probable Average Concentration in Clinch River below White Oak Creek

This Week	$4.7 \times 10^{-7}$ $\mu\text{c/cc}^*$
Deviation From Last Week	-57.8%
Deviation From Average of Last 4 Weeks	-64.1%

\*Calculated using as a dilution factor the ratio of the average discharge from White Oak Lake to the average flow of Clinch River for this period.

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Liquid Waste Disposal

Page 3

3. Statistical Data (cont'd)

3. Disposition Data

Settling Basin

White Oak Dam

	<u>Beta</u> <u>mrp/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrp</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	2.35	2.55	4.91	0.044	0.051	0.095
Deviation From Last Week	- 9.5%	-16.4%	-13.2%	-10.2%	-55.4%	-25.8%
Deviation From Previous 4 Weeks	-10.2%	-11.4%	-10.8%	- 6.4%	-45.3%	-30.7%

C. Supplementary Reports

No special reports this week.

*W. D. Cottrell*  
W. D. Cottrell

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Oak Ridge National Laboratory

Health Physics Division  
OAK RIDGE NATIONAL LABORATORY

CENTRAL FILES NUMBER

49-5-178

Subject: Liquid Waste Disposal, Week Ending May 8, 1949

Report No.: ASI-533-49

Author: W. D. Cottrell

Date: May 18, 1949

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For The Atomic Energy Commission

*H. P. Canale*  
Chief, Declassification Branch

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Liquid Waste Disposal  
Week Ending May 8, 1949

A. Salient and Non-Routine Items

In spite of the fact that fewer curies of activity were discharged into Clinch River this week than last week, the probable average concentration in Clinch River showed an increase of approximately 48.5% over last week. This was due primarily to the decreased discharge from Norris Lake during this period and hence decreased flow in Clinch River.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	32.90	12.77	45.67	15.52	10.11	25.63
Deviation from Last Week	+0.2%	-4.4%	-1.1%	-44.3%	-3.3%	-33.1%
Deviation From Previous 4 Weeks	+0.4%	-15.9%	-4.8%	-23.0%	-4.9%	-16.7%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$10.4 \times 10^{-7} \mu\text{c/cc}$
Deviation From Last Week	+48.5%
Deviation From Previous Four Weeks	+30.8%

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\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Dam		
	Beta <u>mrep/hr</u>	Gamma <u>mr/hr</u>	Total <u>mr(ep)/hr</u>	Beta <u>mrep/hr</u>	Gamma <u>mr/hr</u>	Total <u>mr(ep)/hr</u>
This Week	1.85	1.85	3.70	0.030	0.057	0.087
Deviation From Last Week	+23.6%	+0.2%	+10.7%	-21.1%	+35.7%	+8.8%
Deviation From Previous Four Weeks	-17.0%	-26.5%	-22.0%	-33.3%	-16.2%	-23.0%

C. Supplementary Reports

No special reports this week.

*W. D. Cottrell*  
W. D. Cottrell

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Oak Ridge National Laboratory

Health Physics Division

Subject: Liquid Waste Disposal, Week Ending May 15, 1949


Report No.: ASI-534-49

Author: W. D. Cottrell

Date: May 25, 1949



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H. R. Canale  
Chief, Declassification Branch

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Liquid Waste Disposal  
Week Ending May 15, 1949

A. Salient and Non-Routine Items

The probable average concentration in Clinch River below White Oak Creek showed an increase of 87.5% over last week while the total amount of activity discharged into the river increased only 2.4%. Again this increase in the probable average concentration in the Clinch may be traced to decreased Clinch River flows, and hence decreased dilution of the White Oak Lake discharge. The average dilution factor afforded by the Clinch below the mouth of White Oak Creek during this period was approximately 45.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	32.22	13.36	45.58	17.81	8.44	26.25
Deviation from Last Week	-2.1%	+4.6%	-0.2%	+14.8%	-16.5%	+2.4%
Deviation From Previous 4 Weeks	-2.9%	-10.4%	-5.2%	-8.7%	-11.7%	-9.7%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$19.5 \times 10^{-7} \mu\text{c/cc}$
Deviation From Last Week	+87.5%
Deviation From Previous Four Weeks	+143.8%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	1.50	1.75	3.25	0.038	0.053	0.091
Deviation From Last Week	-18.9%	-5.2%	-12.1%	+26.7%	-7.0%	+4.6%
Deviation From Previous Four Weeks	-27.6%	-24.7%	-26.1%	-5.0%	-7.0%	-6.2%

*W. D. Cottrell*  
W. D. Cottrell

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Oak Ridge National Laboratory

Health Physics Division

OAK RIDGE NATIONAL LABORATORY

CENTRAL FILES NUMBER

49-6-90

Subject: Liquid Waste Disposal, Week Ending May 22, 1949

Report No.: ASI-536-49

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*Daniel Hampton*  
Technical Information Officer  
ORNL Site

*4/19/95*  
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Date: June 1, 1949

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Liquid Waste Disposal  
Week Ending May 22, 1949

A. Salient and Non-Routine Items

This week word was received from the Health Physics Group at K-25 that the activity level of the K-25 filtered water was significantly higher than normal. This increase was noted on 5-12-49 at which time the concentration was approximately  $6.7 \times 10^{-7}$   $\mu\text{c}/\text{cc}$ . The level of activity peaked on 5-16-49 at a value of  $15.0 \times 10^{-7}$   $\mu\text{c}/\text{cc}$ , then decreased to  $0.7 \times 10^{-7}$   $\mu\text{c}/\text{cc}$  on 5-24-49, this latter value being below the normal activity level of the filtered water in question.

This marked increase in activity level was brought about by decreased Clinch River flow and, hence, decreased dilution of our wastes discharged into the Clinch River.

On the basis of a yearly average flow in Clinch River of 4000 c.f.s., the maximum amount of activity which may be discharged into the river is one curie per day if we are not to exceed a concentration of  $1 \times 10^{-7}$   $\mu\text{c}/\text{cc}$  in the Clinch River below the mouth of White Oak Creek.

The average daily discharge into the Clinch River for the five week period ending 5-22-49 was 3.29 curies (beta + gamma). Taking into account the dilution afforded by the river during this period this gives an average concentration of  $9.3 \times 10^{-7}$   $\mu\text{c}/\text{cc}$  in the Clinch River for this five week period.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	6.36	2.87	9.23	50.05	45.86	95.91
Deviation from Last Week	-64.3%	-66.0%	-64.8%	+55.3%	+243.3%	+110.4%
Deviation from Previous 4 Weeks	-64.9%	-65.6%	-65.1%	+55.6%	+237.0%	+109.5%

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B. Statistical Data (cont'd)

## 2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week  $5.0 \times 10^{-7}$   $\mu\text{c/cc}$ 

Deviation From Last Week -74.3%

Deviation From Previous Four Weeks -51.9%

## 3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
	<u>mrep/hr</u>	<u>mr/hr</u>	<u>mr(ep)/hr</u>	<u>mrep/hr</u>	<u>mr/hr</u>	<u>mr(ep)/hr</u>
This Week	0.049	0.058	0.107	3.499	5.904	9.403
Deviation From Last Week	+28.9%	+9.4%	+17.6%	+133.0%	+237.2%	+189.1%
Deviation From Previous Four Weeks	+28.9%	+13.7%	+20.2%	+94.3%	+195.3%	+147.4%

C. Supplementary Reports

No special reports this week.

*W. D. Cottrell*  
W. D. Cottrell

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\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Oak Ridge National Laboratory



Health Physics Division

OAK RIDGE NATIONAL LABORATORY

CENTRAL FILES NUMBER

49-6-130

Subject: Liquid Waste Disposal, Week Ending May 29, 1949

Report No.: ASI-537-49

Author: W. D. Cottrell

Date: June 6, 1949

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Liquid Waste Disposal  
Week Ending May 29, 1949

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For The Atomic Energy Commission

*H. F. Canale*

Chief, Declassification Branch *QF*

A. Salient and Non-Routine Items

An increased level of radioactivity has prevailed in the Clinch River below the mouth of White Oak Creek for the last six weeks. In an effort to reduce this level the amount of active wastes entering the White Oak Creek system has been drastically reduced. This action is necessary since we have only limited control over the wastes once they are in the White Oak Creek system.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	16.82	7.82	24.64	7.56	10.61	18.17
Deviation from Last Week	-66.4%	-82.9%	-74.3%	+18.9%	+269.7%	+96.86%
Deviation from Previous 4 Weeks	-54.5%	-63.4%	-57.8%	-55.2%	+33.1%	-26.9%

2. Probable Average Concentration in Clinch River below White Oak Creek\*

This Week	$8.6 \times 10^{-7} \mu\text{c/cc}$
Deviation from Last Week	+72.0%
Deviation from Previous Four Weeks	-18.1%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	.760	.911	1.671	.054	.037	.091
Deviation from Last Week	-78.2%	-84.6%	-82.2%	+10.2%	-36.2%	-14.95%
Deviation from Previous 4 Weeks	-63.6%	-67.9%	-66.1%	+38.5%	-20.2%	-1.1%

*W. D. Cottrell*  
W. D. Cottrell

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June 21, 1949

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J. C. Hart

A. H. Holland, Jr. (AEC)  
L. B. Malet  
W. D. Cottrell

T. H. J. Burnett  
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From: W. D. Cottrell

Please correct your report No. 49-6-130, subject, "Liquid Waste Disposal, Week Ending May 29, 1949, Part B., 1. and 2. as indicated on the attached page.

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Liquid Waste Disposal  
Week Ending

A. Salient and Non-Routine Items

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week					1.51	9.07
Deviation From Last Week					-47.4%	-1.7%
Deviation From Previous 4 Weeks					-81.1%	-63.5%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$4.29 \times 10^{-7}$
Deviation From Last Week	-14.2%
Deviation From Previous Four Weeks	-59.1%

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\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Oak Ridge National Laboratory

Health Physics Division

Subject: Liquid Waste Disposal, Week Ending June 5, 1949

Report No.: ASI-539-49

8  
INV

Author: W. D. Cottrell

INV.  
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Date: June 5, 1949

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Liquid Waste Disposal  
Week Ending June 5, 1949

A. Salient and Non-Routine Items

The liquid waste evaporator is now operating at full capacity. According to estimates by the Operations Division this should reduce the total amount of activity going into White Oak Creek by 95%. This in turn will materially reduce the activity level in Clinch River water and, hence, in the filtered water at K-25.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	18.70	9.36	28.06	5.82	<del>7.25</del> <sup>1.31</sup>	<del>13.07</del> <sup>7.13</sup>
Deviation From Last Week	+11.2%	+19.7%	+13.9%	-23.0%	<del>-31.7%</del> <sup>-13.2%</sup>	<del>-28.1%</del> <sup>-21.4%</sup>
Deviation From Previous 4 Weeks	-43.3%	-53.1%	-47.0%	-50.7%	<del>-8.5%</del> <sup>-77.1%</sup>	<del>-34.1%</del> <sup>-59.4%</sup>

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	<del>2.77</del> <sup>2.8</sup> x 10 <sup>-7</sup> µc/cc
Deviation From Last Week	<del>-67.8%</del> <sup>-34.5%</sup>
Deviation From Previous Four Weeks	<del>-74.8%</del> <sup>-71.3%</sup>

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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For The Atomic Energy Commission

*H. P. Canale*  
Chief, Declassification Branch *ad*



B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.910	1.165	2.075	0.042	0.037	0.079
Deviation From Last Week	+19.7%	+27.9%	+24.2%	-22.2%	0.0%	-13.2%
Deviation From Previous Four Weeks	-51.9%	-55.3%	-53.8%	- 2.3%	-27.5%	-15.96%

*W. D. Cottrell*  
W. D. Cottrell

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Oak Ridge National Laboratory

Health Physics Division



Subject: Liquid Waste Disposal, Week Ending June 12, 1949

Report No.: ASI-542-49

Author: W. D. Cottrell

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Date: June 17, 1949

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Liquid Waste Disposal  
Week Ending June 12, 1949

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DATE 9/5/67  
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*H. R. Canale*  
Chief, Declassification Branch *ac*

A. Salient and Non-Routine Items

Complaints were received that men of the J. A. Jones Construction Company were believed to have received blisters on their hands from washing them in the small creek east of the new isotope area. Samples from this creek were checked daily from 5-5-49 to 6-5-49 for radio-activity and pH. Samples collected from the drain entering the creek from the vehicle decontamination rack showed an average activity level of  $1.0 \times 10^{-5}$   $\mu\text{c/cc}$  and an average pH of 7.8 with a maximum of 9.4 and a minimum of 2.4. Samples taken approximately 300 ft. upstream from the isotope area and below the point where the drain enters the creek showed an average activity level of  $1.5 \times 10^{-6}$   $\mu\text{c/cc}$  and an average pH of 8.2 with a maximum of 10.2 and a minimum of 6.5.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	25.86	10.67	36.53	7.34	1.67	9.01
Deviation from Last Week	+38.3%	+14.0%	+30.2%	-26.1%	+31.5%	+27.1%
Deviation from Previous 4 Weeks	-12.2%	-44.1%	-24.8%	-21.8%	-52.6%	-30.2%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$3.0 \times 10^{-7}$ $\mu\text{c/cc}$
Deviation from Last Week	+7.1%
Deviation from Previous Four Weeks	-62.0%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.771	1.021	1.792	0.051	0.033	0.084
Deviation from Last Week	-15.3%	-12.4%	-13.6%	+21.4%	-10.8%	+6.3%
Deviation from Previous 4 Weeks	-53.8%	-57.6%	-56.0%	+10.9%	-28.3%	-8.7%

*W. D. Cottrell*  
W. D. Cottrell

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*L. B. Emlet*

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Subject: Liquid Waste Disposal, Week Ending June 19, 1949 *49-7-13*

Report No.: ASI-545-49

Author: W. D. Cottrell

Date: June 24, 1949

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Liquid Waste Disposal  
Week Ending June 19, 1949

Page 2

A. Salient and Non-Routine Items

Although it is much too early to evaluate the effectiveness of the liquid waste evaporator in reducing the amount of activity discharged into the White Oak Creek system, the initial results look promising. This week there was approximately 57% less activity discharged from the Settling Basin than last week and approximately 66% less than the average for the four previous weeks.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	10.88	4.87	15.75	8.65	2.33	10.98
Deviation from Last Week	-57.9%	-54.4%	-56.9%	+17.8%	+39.5%	+21.9%
Deviation from Previous Four Weeks	-60.9%	-73.6%	-65.98%	+27.8%	+26.6%	+27.5%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$3.9 \times 10^{-7}$ $\mu\text{c/cc}$
Deviation From Last Week	+30.0%
Deviation From Previous Four Weeks	+3.4%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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For The Atomic Energy Commission

H. F. Canale  
Chief, Declassification Branch

B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.360	0.393	0.753	0.055	0.043	0.098
Deviation from Last Week	-53.3%	-61.5%	-57.98%	+ 7.8%	+30.3%	+16.8%
Deviation from Previous Four Weeks	-75.8%	-82.5%	-79.8%	+12.2%	+ 4.9%	+ 8.9%

*D. M. Davis*  
D. M. Davis

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Subject: Liquid Waste Disposal, Week Ending June 26, 1949

Report No.: ASI-549-49

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CENTRAL FILES NUMBER  
49-7-30

Author: R. G. Lawler

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Date: June 30, 1949

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Liquid Waste Disposal  
Week Ending June 26, 1949

For The Atomic Energy Commission

*H. P. Canale*  
Chief, Declassification Branch *ae*

A. Salient and Non-Routine Items

For comparison, different methods of bringing water samples to dryness were used. It was found that a 10 ml sample from White Oak Dam brought slowly to dryness in an aluminum dish by transferring 5 ml at a time from a 5 ml size pipette gave approximately 20% higher count per ml than the old method of boiling down a 50 ml sample in a beaker and microwashing into an aluminum dish. The old method has been abandoned and the above mentioned one adopted for samples from White Oak Dam.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	8.38	4.38	12.76	6.70	1.54	8.24
Deviation from Last Week	-23.0%	-10.1%	-19.0%	-22.5%	-33.9%	-25.0%
Deviation from Previous 4 Weeks	-54.4%	-46.5%	-51.4%	- 8.7%	- 9.4%	- 8.8%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$7.2 \times 10^{-7}$ $\mu\text{c/cc}$ **
Deviation from Last Week	+84.6%
Deviation from Previous Four Weeks	+105.7%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

\*\*Dilution factor for this week was  $7.3 \times 10^{-3}$  as compared to  $3.5 \times 10^{-3}$  for last week.

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B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.331	0.377	0.708	0.050	0.036	0.086
Deviation from Last Week	- 8.1%	- 4.1%	- 6.0%	- 9.1%	-16.3%	-12.2%
Deviation from Previous 4 Weeks	-111.5%	-56.8%	-55.0%	- 2.0%	- 5.3%	- 2.3%

*R. G. Lawler*

R. G. Lawler

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Subject: Liquid Waste Disposal, Week Ending July 3, 1949



Report No.: ASI-553-49

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Author: W. D. Cottrell

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Liquid Waste Disposal  
Week Ending July 3, 1949

A. Salient and Non-Routine Items

Although the amount of activity being discharged into the Clinch River has steadily decreased for the last few weeks, the probable average concentration in the river has increased over the same period of time. This situation is caused by the decreased flow of the Clinch River resulting from decreased discharge from Norris Lake. The average flow of Clinch River during the last five or six weeks was lower than the flow during the same period of 1948 by a factor of approximately eight.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	6.29	4.20	10.49	5.69	1.18	6.87
Deviation from Last Week	-24.9%	- 4.1%	-17.8%	-15.1%	-23.4%	-16.6%
Deviation from Previous 4 Weeks	-60.6%	-42.6%	-54.9%	-20.2%	-31.0%	-22.3%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$7.9 \times 10^{-7}$ $\mu\text{c/cc}$
Deviation from Last Week	+9.7%
Deviation from Previous Four Weeks	+86.8%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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For The Atomic Energy Commission

H. R. Canale  
Chief, Declassification Branch

Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.332	0.399	0.731	0.036	0.022	0.058
Deviation from Last Week	+ 0.3%	+ 5.8%	+ 3.2%	-28.0%	-38.9%	-32.6%
Deviation from Previous 4 Weeks	-44.0%	-46.0%	-45.1%	-28.0%	-40.5%	-33.3%

*W. D. Cottrell*  
W. D. Cottrell

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Subject: Liquid Waste Disposal, Week Ending July 10, 1949


Report No.: ASI-555-49

Author: W. D. Cottrell

Date: July 18, 1949

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Liquid Waste Disposal  
Week Ending July 10, 1949

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For The Atomic Energy Commission

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Chief, Declassification Branch *ae*

A. Salient and Non-Routine Items

The amount of activity discharged from the White Oak Lake continued to decrease during this period while the amount discharged from the Settling Basin showed a sharp rise. This rise was caused by foaming of the wastes in the evaporator in conjunction with a faulty valve. This caused the highly active condensate to be sent directly to the Settling Basin instead of being returned to one of the holding tanks as normally would have been the case.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	21.02	24.23	45.25	3.63	0.92	4.55
Deviation from Last Week	+234.2%	+476.9%	+331.4%	-36.2%	-22.0%	-33.8%
Deviation from Previous 4 Weeks	+63.6%	+301.8%	+139.7%	-48.9%	-45.2%	-48.2%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$5.10 \times 10^{-7}$ $\mu\text{c/cc}$
Deviation from Last Week	-35.4%
Deviation from Previous Four Weeks	-7.27%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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B. Statistical Data (cont'd)

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	1.343	2.225	3.568	0.029	0.021	0.050
Deviation from Last Week	+304.5%	+457.6%	+388.1%	-19.4%	-4.5%	-13.8%
Deviation from Previous 4 Weeks	+199.1%	+306.0%	+257.9%	-39.6%	-38.2%	-39.0%

*W. D. Cottrell*  
W. D. Cottrell

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Health Physics Division

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CENTRAL FILES NUMBER

Subject: Liquid Waste Disposal, Week Ending July 17, 1949

49-7-257

Report No.: ASI-556-49

Author: W. D. Cottrell



Date: July 26, 1949

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8-1-49

Page 2  
DATE 9/5/67

For The Atomic Energy Commission

*H. P. Canale*  
Chief, Declassification Branch *CC*Liquid Waste Disposal  
Week Ending July 17, 1949A. Salient and Non-Routine Items

When the Watts Bar Reservoir is carried at a high level, that section of White Oak Creek between White Oak Dam and the Clinch River becomes an embayment of the Watts Bar Reservoir.

Preliminary investigation indicates that under certain conditions the concentration of radioactivity in the water of this embayment may approach the activity level of the White Oak Dam effluent. When this condition prevails this embayment area becomes a contaminated area and should be posted accordingly.

The presence of this embayment may affect the concentration of radioactivity in the Clinch River in two ways. First, if the Watts Bar Reservoir water level is high and constant, it may act as a buffer against slugs of activity from the White Oak Lake and tend to make the discharge of these slugs of activity into the Clinch River channel more gradual. At the same time it would act as a settling pond giving more time for settling and decay. Second, if the Clinch flow is low and the water level in Watts Bar Reservoir is high and is lowered rapidly, the activity in this embayment may cause a slugging effect in the Clinch even though the discharge from the White Oak Dam is low.

The problem of properly posting the entire White Oak Creek drainage area was referred to the Activity Hazards Committee which in turn referred the problem to the Division of Biology and Medicine of the Atomic Energy Commission. To date, no information has been received as to the disposition of this problem.

B. Statistical Data1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	10.18	12.61	22.79	5.94	1.58	7.52
Deviation from Last Week	-51.6%	-48.0%	-49.6%	+63.6%	+71.7%	+65.3%
Deviation from Previous Four Weeks	-12.5%	+33.9%	+8.2%	-3.7%	+6.0%	-1.8%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	6.38 x 10 <sup>-7</sup> $\mu$ c/cc
Deviation From Last Week	+25.1%
Deviation From Previous Four Weeks	+5.8%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

## Liquid Waste Disposal

B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.502	1.064	1.566	0.036	0.027	0.063
Deviation from Last Week	-62.6%	-52.2%	-56.1%	+24.1%	+28.6%	+26.0%
Deviation from Previous Four Weeks	-15.2%	+25.3%	+8.8%	-16.3%	-12.9%	-13.7%

*W. D. Cottrell*  
W. D. Cottrell

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Subject: Liquid Waste Disposal, Week Ending July 24, 1949

Report No.: ASI-558-49

Author: W. D. Cottrell

Date: July 29, 1949

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Liquid Waste Disposal  
Week Ending July 24, 1949

A. Salient and Non-Routine Items

The unusually large amount of activity discharged from the White Oak Lake this week may be attributed to the inadequacy of the White Oak Dam to impound the runoff from the rainfall that fell on 7-17-49 and 7-18-49. The 3.06 inches of rain that fell on these two days caused the White Oak Lake to top the sheet piling on 7-18-49, discharging approximately 14.0 curies of activity into the Clinch River. Fortunately this rain was general enough to give increased flow in the Clinch River, thus affording greater dilution and resulting in a slight decrease in the probable average concentration of activity in the Clinch for the week. However, this does not preclude the possibility that the concentration of activity in the river on 7-18-49 was much greater than the weeks average despite the greatly increased flow in the Clinch on this date.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	7.79	3.28	11.07	19.31	4.79	24.10
Deviation from Last Week	-23.5%	-74.0%	-51.4%	+225.1%	+203.2%	+220.5%
Deviation from Previous 4 Weeks	-32.1%	-71.1%	-51.5%	+251.7%	+265.6%	+254.4%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$6.14 \times 10^{-7} \mu\text{c/cc}$
Deviation from Last Week	-3.76%
Deviation from Previous Four Weeks	-7.67%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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For The Atomic Energy Commission

*H. B. Canale*  
Chief, Declassification Branch

Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.248	0.254	0.502	0.025	0.019	0.044
Deviation From Last Week	-50.6%	-76.1%	-67.9%	-30.6%	-29.6%	-30.2%
Deviation From Previous Four Weeks	-60.4%	-75.0%	-69.4%	-34.2%	-29.6%	-32.3%

*W. D. Cottrell*  
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Subject: Liquid Waste Disposal, Week Ending July 31, 1949

Report No.: ASI-561-49

Author: W. D. Cottrell

Date: August 3, 1949

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Liquid Waste Disposal  
Week Ending July 31, 1949

Page 2

A. Salient and Non-Routine Items

The low figure given for the total amount of activity discharged from White Oak Lake this week is an indirect result of the rain storm on 7-18 and 7-19. During this flood the White Oak Dam spillway gate was lowered and left in this position during and immediately following the flood. The gate was raised to the normal operating level on 7-27-49, thus giving no discharge from White Oak Lake during the latter part of this period. This action together with the increased flow of the Clinch gave a significant decrease in the probable average concentration of activity in the Clinch River below White Oak Creek during this period.

B. Statistical Data

## 1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	7.07	3.04	10.11	1.87	0.35	2.22
Deviation from Last Week	-9.2%	- 7.3%	-8.7%	-90.3%	- 92.7%	-90.8%
Deviation from Previous 4 Weeks	-37.5%	-72.6%	-54.9%	-78.4%	- 52.7%	-79.4%

## 2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.98 \times 10^{-7}$ $\mu\text{c/cc}$
Deviation From Last Week	- 84.0%
Deviation From Previous Four Weeks	- 84.6%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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For The Atomic Energy Commission

*H. R. Canale*  
Chief, Declassification Branch



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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.241	0.219	0.460	0.035	0.015	0.050
Deviation from Last Week	-2.8%	-13.8%	-8.4%	+40.0%	-21.0%	+13.6%
Deviation from Previous 4 Weeks	-60.2%	-77.8%	-71.1%	+9.4%	-31.8%	- 7.4%

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Subject: Liquid Waste Disposal, Week Ending October 2, 1949

Report No.: ASI-578-49

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Author: W. D. Cottrell

Date: October 6, 1949

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Liquid Waste Disposal  
Week Ending October 2, 1949

A. Salient and Non-Routine Items

The average amounts of plutonium discharged per week from the Settling Basin and the White Oak Lake during the two week period ending 10-2-49 are higher by factors of approximately 10 and 6, respectively, when compared to like averages for the five week period ending 9-18-49.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	3.94	2.57	6.51	8.29	1.05	9.34
Deviation from Last Week	-11.9%	+ 8.0%	- 5.0%	-40.9%	-31.8%	-40.0%
Deviation from Previous 4 Weeks	-74.6%	-43.0%	-67.5%	-18.6%	-53.9%	-25.0%

2. Probable Average Concentration in Clinch River below White Oak Creek\*

This Week	$0.7 \times 10^{-7} \mu\text{c/cc}$
Deviation from Last Week	-36.4%
Deviation from Previous Four Weeks	-50.0%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.215	0.202	0.417	0.094	0.028	0.122
Deviation from Last Week	-11.9%	+ 4.7%	- 4.6%	-16.1%	- 6.7%	-14.1%
Deviation from Previous 4 Weeks	-67.5%	-44.0%	-59.2%	-18.3%	-59.4%	-33.7%

4. Plutonium Discharged

<u>Date</u> <u>Week Ending</u>	<u>Conc.</u> <u>µg/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>	<u>Conc.</u> <u>µg/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>
9-25-49	148.3	3.32	18.3	1.75
10-2-49	94.7	2.19	25.0	1.71
Ave./week	121.5	2.75	21.6	1.73

*W. D. Cottrell*  
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48-10-102

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Report No.: ASI-582-49

*1949 K. Z. Morgan*

Author: W. D. Cottrell




*INV 66*



Date: October 14, 1949



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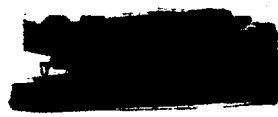
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Liquid Waste Disposal  
Week Ending October 9, 1949

A. Salient and Non-Routine Items

Approximately three times as much plutonium was discharged from the White Oak Lake as was discharged from the Settling Basin this week. This may be accounted for due to the increased amount of plutonium discharged from the Settling Basin during the two previous weeks.

E. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	2.62	1.69	4.31	6.57	0.76	7.33
Deviation from Last Week	-33.5%	-34.2%	-33.8%	-20.7%	-27.6%	-21.5%
Deviation from Previous 4 Weeks	-81.6%	-55.4%	-76.1%	-37.8%	-61.8%	-41.6%

2. Probable Average Concentration in Clinch River below White Oak Creek\*

This Week	$0.55 \times 10^{-7} \mu\text{c/cc}$
Deviation from Last Week	-21.4%
Deviation from Previous Four Weeks	-57.7%

---

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

[REDACTED] [REDACTED]

B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Lake		
	Beta <u>mrep/hr</u>	Gamma <u>mr/hr</u>	Total <u>mr(ep)/hr</u>	Beta <u>mrep/hr</u>	Gamma <u>mr/hr</u>	Total <u>mr(ep)/hr</u>
This Week	0.165	0.147	0.312	0.074	0.020	0.094
Deviation from Last Week	-23.3%	-27.2%	-25.2%	-21.3%	-28.6%	-22.9%
Deviation from Previous 4 Weeks	-71.2%	-51.6%	-64.4%	-23.7%	-53.5%	-32.9%

## C. Plutonium Discharged

	Settling Basin		White Oak Lake	
Date <u>Week Ending</u>	Conc. <u><math>\mu\text{g/cc} \times 10^{-9}</math></u>	Total mg <u>Plutonium</u>	Conc. <u><math>\mu\text{g/cc} \times 10^{-9}</math></u>	Total mg <u>Plutonium</u>
10-9-49	15.7	0.36	17.5	1.22

*W. D. Cottrell*  
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Health Physics Division



Subject: Liquid Waste Disposal, Week Ending October 16, 1949

Report No.: ASI-585-49

Author: W. D. Cottrell

Date: October 21, 1949

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1	Baranowski, F. P.	<i>JP</i>
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Liquid Waste Disposal  
Week Ending October 16, 1949

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DATE 9/6/67

For The Atomic Energy Commission

*H. P. Canale*  
Chief, Declassification Branch *ae*

A. Salient and Non-Routine Items

Due to equipment breakdown, the plutonium analyses on the White Oak Lake and Settling Basin effluents were not completed this week. These results will be reported next week.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	12.38	4.87	17.25	5.75	0.70	6.45
Deviation from Last Week	+372.5%	+188.2%	+300.2%	-12.5%	- 7.9%	-12.0%
Deviation from Previous 4 Weeks	+10.8%	+37.6%	+17.3%	-40.6%	-50.4%	-41.8%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.43 \times 10^{-7}$ $\mu\text{c/cc}$
Deviation from Last Week	-28.8%
Deviation from Previous Four Weeks	-55.2%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.688	0.400	1.088	0.066	0.021	0.087
Deviation from Last Week	+317.0%	+172.1%	+248.7%	-10.8%	+ 5.0%	- 7.4%
Deviation from Previous 4 Weeks	+24.2%	+38.9%	+29.2%	-28.3%	-32.3%	-29.3%

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Subject: Liquid Waste Disposal, Week Ending October 23, 1949

Report No.: ASI-588-49

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Liquid Waste Disposal  
Week Ending October 23, 1949

A. Salient and Non-Routine Items

The increased probable average concentration in Clinch River this week may be attributed to the decreased discharge from Norris Lake coincident with an increase in the activity discharged from White Oak Lake.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	8.90	3.24	12.14	11.21	2.24	13.45
Deviation from Last Week	-28.1%	-33.5%	-29.6%	+95.0%	+220.0%	+108.5%
Deviation from Previous 4 Weeks	+52.1%	+12.5%	+39.1%	+29.4%	+121.8%	+39.1%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$1.87 \times 10^{-7}$ $\mu\text{c/cc}$
Deviation from Last Week	+334.9%
Deviation from Previous Four Weeks	+171.0%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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For The Atomic Energy Commission

*H. R. Canale*  
Chief, Declassification Branch

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Liquid Waste Disposal

Page 2

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	Beta <u>mrep/hr</u>	Gamma <u>mr/hr</u>	Total <u>mr(ep)/hr</u>	Beta <u>mrep/hr</u>	Gamma <u>mr/hr</u>	Total <u>mr(ep)/hr</u>
This Week	0.448	0.268	0.716	0.066	0.030	0.096
Deviation from Last Week	-34.9%	-33.0%	-34.2%	0.0%	+42.9%	+10.3%
Deviation from Previous 4 Weeks	+36.6%	+14.0%	+27.2%	-23.3%	+20.0%	-13.5%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
Date Week Ending	Conc. <u>µg/cc x 10<sup>-9</sup></u>	Total mg <u>Plutonium</u>	Conc. <u>µg/cc x 10<sup>-9</sup></u>	Total mg <u>Plutonium</u>
10-16-49	260.6	5.76	38.1	2.53
10-23-49	5.7	0.13	3.8	0.48

*W. D. Cottrell*  
W. D. Cottrell

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Health Physics Division

Subject: Liquid Waste Disposal, Week Ending October 30, 1949

OAK RIDGE NATIONAL LABORATORY

CENTRAL FILES NUMBER

49-11-66

Report No.: ASI-591-49

INV.  
65

Author: W. D. Cottrell

Date: November 4, 1949

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2	Barnett, S. C.	<i>all</i>
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For The Atomic Energy Commission

*H. R. Canale*  
Chief, Declassification Branch

Liquid Waste Disposal  
Week Ending October 30, 1949

A. Salient and Non-Routine Items

A rainfall of 2.32 inches fell on 10-30-49 causing the White Oak Lake to overflow the sheet piling. As a result of this overflow, approximately 10.97 curies of activity were discharged into Clinch River during the three day period 10-30-49 to 11-1-49. This will be reflected in an increased probable average concentration in Clinch River during the week ending 11-6-49.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	4.20	1.81	6.01	6.71	1.13	7.84
Deviation from Last Week	-52.8%	-44.1%	-50.5%	-40.1%	-49.6%	-41.7%
Deviation from Previous 4 Weeks	-39.7%	-41.4%	-40.2%	-15.6%	- 5.0%	-14.2%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$1.28 \times 10^{-7} \mu\text{c/cc}$
Deviation from Last Week	-31.5%
Deviation from Previous Four Weeks	+43.8%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.225	0.152	0.377	0.056	0.022	0.078
Deviation from Last Week	-49.8%	-43.3%	-47.3%	-15.2%	-26.7%	-18.7%
Deviation from Previous 4 Weeks	-40.6%	-40.2%	-40.4%	-25.3%	-12.0%	-22.0%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
<u>Date</u> <u>Week Ending</u>	<u>Conc.</u> <u><math>\mu\text{g/cc} \times 10^{-9}</math></u>	<u>Total mg</u> <u>Plutonium</u>	<u>Conc.</u> <u><math>\mu\text{g/cc} \times 10^{-9}</math></u>	<u>Total mg</u> <u>Plutonium</u>
10-30-49	10.0	0.21	2.8	0.27

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Health Physics Division

49-9-140

Subject: Liquid Waste Disposal, Week Ending September 11, 1949

Report No.: ASI-573-49

Author: W. D. Cottrell



Date: September 19, 1949

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Liquid Waste Disposal  
Week Ending September 11, 1949

A. Salient and Non-Routine Items

The increased amount of activity discharged from the Settling Basin during the last three weeks has raised the specific activity level of the White Oak Dam effluent by a factor of approximately two. If this high rate of activity discharge from the Settling Basin is maintained we can expect the average concentration in the Clinch River below White Oak Creek to remain above the maximum permissible concentration of  $1 \times 10^{-7}$   $\mu\text{c}/\text{cc}$ . ← NB

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Dam		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	14.95	2.69	17.64	10.09	3.07	13.16
Deviation from Last Week	+66.7%	-50.8%	+22.2%	+49.0%	+37.7%	+46.2%
Deviation from Previous 4 Weeks	-37.7%	-73.1%	-48.1%	+105.5%	+111.7%	+106.9%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$2.1 \times 10^{-7} \mu\text{c}/\text{cc}$
Deviation from Last Week	+101.9%
Deviation from Previous Four Weeks	+105.9%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

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B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Dam		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.239	0.210	0.449	0.096	0.069	0.165
Deviation from Last Week	-58.2%	-51.2%	-55.2%	-37.2%	-46.9%	-43.9%
Deviation from Previous Four Weeks	-76.0%	-73.6%	-74.9%	- 4.9%	-16.9%	-10.3%

*W. D. Cottrell*  
W. D. Cottrell

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Health Physics Division

Subject: Liquid Waste Disposal, Week Ending November 6, 1949



Report No.: ASI-592-49

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49-11-142

Author: W. D. Cottrell

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Liquid Waste Disposal  
Week Ending November 6, 1949

For The Atomic Energy Commission

*H. R. Canale*  
Chief, Declassification Branch *ad*

A. Salient and Non-Routine Items

The increase in the amount of activity discharged from White Oak Lake this week was largely a result of the rainstorm on 10-30-49. During the three day period, 10-30-49 to 11-1-49, approximately 13.6 curies of radioactivity were discharged into Clinch River. This "slugging" of the river caused the level of radioactivity in the finished water at K-25 to increase by a factor of approximately three for a short period of time.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	4.30	2.63	6.93	14.26	3.65	17.91
Deviation from Last Week	+ 2.4%	+45.3%	+15.3%	+112.5%	+223.0%	+128.4%
Deviation from Previous 4 Weeks	-38.7%	- 9.3%	-30.1%	+87.3%	+201.7%	+104.2%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$2.05 \times 10^{-7}$ $\mu\text{c/cc}$
Deviation from Last Week	+60.2%
Deviation from Previous Four Weeks	+99.0%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.232	0.198	0.430	0.027	0.017	0.044
Deviation from Last Week	+ 3.1%	+30.3%	+14.1%	-51.8%	-22.7%	-46.6%
Deviation from Previous 4 Weeks	-31.1%	-18.2%	-31.0%	-58.5%	-26.1%	-50.0%

4. Plutonium Discharged

	Settling Basin		White Oak Dam	
<u>Date</u> <u>Week Ending</u>	<u>Conc.</u> <u>ug/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>	<u>Conc.</u> <u>ug/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>
11-6-49	3.1	0.07	1.0	0.36

*W. D. Cottrell*  
W. D. Cottrell

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Health Physics Division

Subject: Liquid Waste Disposal, Week Ending November 13, 1949

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Report No.: ASI-594-49

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49-11-191

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Liquid Waste Disposal  
Week Ending November 13, 1949

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Chief, Declassification Branch *OR*

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	4.83	2.43 ✓	7.26 ✓	2.51	0.66 ✓	3.17 ✓
Deviation from Last Week	+12.3%	- 7.6%	+ 4.8%	-82.4%	-81.9%	-82.3%
Deviation from Previous 4 Weeks	-35.1%	-22.6%	-31.4%	-73.5%	-65.8%	-72.2%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.56 \times 10^{-7} \mu\text{c/cc}$
Deviation from Last Week	-72.7%
Deviation from Previous Four Weeks	-60.3%

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.269	0.202	0.471	0.024	0.015	0.039
Deviation from Last Week	+15.9%	+ 2.0%	+ 9.5%	-11.1%	-11.8%	-11.4%
Deviation from Previous 4 Weeks	-32.4%	-20.5%	-27.8%	-55.6%	-31.8%	-48.7%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

4. Plutonium Discharged

Settling Basin			White Oak Lake	
Date Week Ending	Conc. <u><math>\mu\text{g/cc} \times 10^{-9}</math></u>	Total mg Plutonium	Conc. <u><math>\mu\text{g/cc} \times 10^{-9}</math></u>	Total mg Plutonium
11-13-49	3.5	0.777	1.9	0.152

*R. G. Lawler*  
R. G. Lawler

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CENTRAL FILES NUMBER  
49-11.264

Report No.: MOA-598-49

INV.  
65

Author: R. G. Lawler

49  
-11  
-264

Date: November 25, 1949

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Liquid Waste Disposal  
Week Ending November 20, 1949

A. Salient and Non-Routine Items

Eleven one-liter samples were drawn at depths of 50 ft. intervals from the old 600 ft. well located east of the old water plant. These samples were processed and counted for gross beta activity. Results will be reported at once in a separate report.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	2.56	1.08	3.64	2.30	0.61	2.91
Deviation from Last Week	- 47.0%	- 55.6%	- 49.7%	- 8.4%	- 7.6%	- 8.2%
Deviation from Previous 4 Weeks	- 54.0%	- 57.3%	- 55.0%	- 73.5%	- 68.2%	- 72.5%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.32 \mu\text{c/cc} \times 10^{-7}$
Deviation From Last Week	-42.9%
Deviation From Previous Four Weeks	-77.8%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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## 3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.112	0.093	0.205	0.024	0.014	0.038
Deviation from Last Week	-58.4%	-54.0%	-56.5%	0.0%	-6.7%	-2.6%
Deviation from Previous 4 Weeks	-61.9%	-54.6%	-58.9%	-44.2%	-33.3%	-40.6%

## 4. Plutonium Discharged

	Settling Basin		White Oak Lake	
<u>Date</u> <u>Week Ending</u>	<u>Conc.</u> <u>ug/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>	<u>Conc.</u> <u>ug/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>
11-20	5.0	0.105	0.88	0.065

*R. G. Lawler*  
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Oak Ridge National Laboratory

Health Physics Division

Subject: Liquid Waste Disposal, Week Ending November 27, 1949

Report No.: MOA-602-49

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CENTRAL FILES NUMBER  
49-12-23

Author: R. G. Lawler

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Date: December 7, 1949

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Liquid Waste Disposal  
Week Ending November 27, 1949

A. Salient and Non-Routine Items

Average  $\mu\text{c/cc}$  from three background water samples collected from small streams off Emory Valley Road checked with previous background results obtained from Clinch River. The average  $\mu\text{c/cc}$  for each of the two groups was  $.23 \times 10^{-7}$ .

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	4.60	1.85	6.45	1.92	0.43	2.35
Deviation from Last Week	+ 79.7%	+ 71.3%	+ 77.2%	- 16.5%	- 29.5%	- 19.2%
Deviation from Previous 4 Weeks	+ 15.9%	- 7.0%	+ 8.2%	- 70.2%	- 71.5%	- 70.4%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.22 \mu\text{c/cc} \times 10^{-7}$
Deviation from Last Week	- 31.2%
Deviation from Previous Four Weeks	- 79.0%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 2

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	Beta mrep/hr	Gamma mr/hr	Total mr(ep)/hr	Beta mrep/hr	Gamma mr/hr	Total mr(ep)/hr
This Week	0.254	0.189	0.443	0.023	0.012	0.035
Deviation from Last Week	+126.8%	+103.2%	+116.1%	- 4.2%	- 14.3%	- 7.9%
Deviation from Previous 4 Weeks	+ 21.5%	+ 17.4%	+ 19.7%	- 30.3%	- 29.4%	- 30.0%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
Date Week Ending	Conc. $\mu\text{g/cc} \times 10^{-9}$	Total mg Plutonium	Conc. $\mu\text{g/cc} \times 10^{-9}$	Total mg Plutonium
11-27-49	1.0	0.018	*	

\*Net counts per minute on the White Oak Lake samples were so low that the discharge of plutonium was insignificant. Duplicate samples were run to verify these results.

*R. G. Lawler*  
R. G. Lawler

RGL:ac

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Oak Ridge National Laboratory

Health Physics Division



Subject: Liquid Waste Disposal, Week Ending December 4, 1949

Report No.: MOA-603-49

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49-12- 31

Author: R. G. Lawler

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Liquid Waste Disposal  
Week Ending December 4, 1949

A. Salient and Non-Routine Items

None

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	6.22	2.67	8.89	2.24	0.71	2.95
Deviation from Last Week	+ 35.2%	+ 44.3%	+ 37.8%	+ 16.7%	+ 65.1%	+ 25.5%
Deviation from Previous 4 Weeks	+ 52.8%	+ 33.5%	+ 46.5%	- 57.3%	- 47.0%	- 55.2%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.27 \mu\text{c/cc} \times 10^{-7}$
Deviation from Last Week	+ 22.7%
Deviation from Previous Four Weeks	- 65.8%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>
This Week	0.385	0.303	0.688	0.028	0.021	0.049
Deviation from Last Week	+ 51.6%	+ 60.3%	+ 55.3%	+ 21.7%	+ 75.0%	+ 40.0%
Deviation from Previous 4 Weeks	+ 77.4%	+ 78.2%	+ 77.8%	+ 16.7%	+ 29.2%	+ 28.9%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
<u>Date Week Ending</u>	<u>Conc. µg/cc x 10<sup>-9</sup></u>	<u>Total mg Plutonium</u>	<u>Conc. µg/cc x 10<sup>-9</sup></u>	<u>Total mg Plutonium</u>
12-4-49	1.0	0.016	0.88	0.054

*R. G. Lawler*  
R. G. Lawler

RGL:ac

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Health Physics Division

OAK RIDGE NATIONAL LABORATORY



CENTRAL FILES NUMBER  
49-12-73

Subject: Liquid Waste Disposal, Week Ending December 11, 1949

Report No.: MOA-606-49



*W 65*

Author: R. G. Lawler

Date: December 16, 1949

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Liquid Waste Disposal  
Week Ending December 11, 1949

A. Salient and Non-Routine Items

None

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	2.68	2.12	4.80	2.30	1.25	3.55
Deviation from Last Week	- 56.9%	- 20.6%	- 46.0%	+ 2.7%	+ 76.1%	+ 20.3%
Deviation from Previous 4 Weeks	- 41.1%	+ 5.5%	- 26.8%	+ 2.7%	+ 108.3%	+ 25.0%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.22 \mu\text{c/cc} \times 10^{-7}$
Deviation from Last Week	- 18.5%
Deviation from Previous Four Weeks	- 35.3%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.152	0.216	0.368	0.030	0.039	0.069
Deviation from Last Week	- 60.5%	- 28.7%	- 46.5%	+ 7.1%	+ 85.7%	+ 40.8%
Deviation from Previous 4 Weeks	- 40.4%	+ 9.6%	- 18.6%	+ 20.0%	+160.0%	+ 72.5%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
<u>Date</u> <u>Week Ending</u>	<u>Conc.</u> <u>µg/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>	<u>Conc.</u> <u>µg/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>
12-11-49	7.9	0.141	1.32	0.077

*R. G. Lawler*  
R. G. Lawler

RGL:sac

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Oak Ridge National Laboratory

Health Physics Division

Subject: Liquid Waste Disposal, Week Ending December 18, 1949

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Report No.: MOA-608-49

OAK RIDGE NATIONAL LABORATORY  
CENTRAL FILES NUMBER  
49-12-135

Author: W. D. Cottrell

Date: December 27, 1949

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Liquid Waste Disposal  
Week Ending December 18, 1949

A. Salient and Non-Routine Items

The water level in White Oak Lake was lowered several feet this week in an effort to test and calibrate a constant monitoring device being developed by the Waste Disposal Research Section.

This increased discharge from the lake resulted in an increased total curie content being discharged this period. However, sufficient dilution was afforded by the Clinch River to keep the specific activity of the water in the Clinch well below the maximum allowable concentration.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.23	0.52	1.75	7.69	3.18	10.87
Deviation from Last Week	-54.1%	-75.5%	-63.5%	+234.3%	+154.4%	+206.2%
Deviation from Previous 4 Weeks	-69.3%	-73.1%	-70.5%	+251.1%	+324.0%	+269.7%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	0.58 $\mu\text{c}/\text{cc} \times 10^{-7}$
Deviation from Last Week	+163.6%
Deviation from Previous Four Weeks	+123.1%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 2

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.089	0.073	0.162	0.016	0.014	0.030
Deviation from Last Week	-41.4%	-66.2%	-56.0%	-46.7%	-64.1%	-56.5%
Deviation from Previous 4 Weeks	-60.6%	-63.5%	-62.0%	-38.5%	-33.3%	-36.2%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
<u>Date</u> <u>Week Ending</u>	<u>Conc.</u> <u>µg/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>	<u>Conc.</u> <u>µg/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>
12-18-49	4.4	0.057	8.0	3.62

*W. D. Cottrell*  
W. D. Cottrell

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Health Physics Division

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50-1-3

Subject: Liquid Waste Disposal, Week Ending December 25, 1949

Report No.: MOA-611-49

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Author: W. D. Cottrell

Date: January 3, 1950

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Liquid Waste Disposal  
Week Ending December 25, 1949

A. Salient and Non-Routine Items

None

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.40	1.04	2.44	7.33	4.15	11.48
Deviation from Last Week	+ 13.8%	+100.0%	+ 39.4%	- 4.7%	+ 30.5%	+ 5.6%
Deviation from Previous 4 Weeks	- 62.0%	- 41.9%	- 55.4%	+107.1%	+198.6%	+132.9%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.45 \mu\text{c}/\text{cc} \times 10^{-7}$
Deviation from Last Week	- 22.4%
Deviation from Previous Four Weeks	+ 40.6%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River

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Liquid Waste Disposal

Page 2

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>
This Week	0.080	0.109	0.189	0.012	0.016	0.028
Deviation from Last Week	- 10.1%	+ 49.3%	+ 16.7%	- 25.0%	+ 14.3%	- 6.7%
Deviation from Previous 4 Weeks	- 63.6%	- 44.1%	- 54.5%	- 50.0%	- 23.8%	- 37.8%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
<u>Date Week Ending</u>	<u>Conc. µg/cc x 10<sup>-9</sup></u>	<u>Total mg Plutonium</u>	<u>Conc. µg/cc x 10<sup>-9</sup></u>	<u>Total mg Plutonium</u>
12-25-49	9.5	0.164	3.1	1.43

*W. D. Cottrell*  
W. D. Cottrell

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Oak Ridge National Laboratory

Health Physics Division

Subject: Liquid Waste Disposal, Week Ending January 1, 1950

OAK RIDGE NATIONAL LABORATORY

CENTRAL FILES NUMBER

50-1-34

Report No.: MOA-101-50

Author: W. D. Cottrell

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Date: January 9, 19<sup>50</sup>~~49~~

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For: N. T. Gray, Supervisor  
Laboratory Records Dept.  
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Liquid Waste Disposal

Week Ending January 1, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.60	1.16	2.76	2.81	1.72	4.53
Deviation from Last Week	+ 14.3%	+ 11.5%	+ 13.1%	- 61.7%	- 58.6%	- 60.5%
Deviation from Previous 4 Weeks	- 44.4%	- 27.0%	- 38.3%	- 42.5%	- 25.9%	- 37.2%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.23 \mu\text{c}/\text{cc} \times 10^{-7}$
Deviation From Last Week	- 48.9%
Deviation From Previous Four Weeks	- 39.5%

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\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.083	0.111	0.194	0.012	0.014	0.026
Deviation from Last Week	+ 3.7%	+ 1.8%	+ 2.6%	0.0%	- 12.5%	- 7.1%
Deviation from Previous 4 Weeks	- 52.8%	- 36.6%	- 44.7%	- 42.9%	- 36.4%	- 39.5%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
<u>Date</u> <u>Week Ending</u>	<u>Conc.</u> <u>ug/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>	<u>Conc.</u> <u>ug/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>
1-1-50	2.8	0.053	0.88	0.172

*W. D. Cottrell*  
W. D. Cottrell

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Health Physics Division

Subject: Liquid Waste Disposal, Week Ending January 8, 1950

OAK RIDGE NATIONAL LABORATORY

CENTRAL FILES NUMBER

50-1-105

Report No.: MOA-104-50

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Authors: W. D. Cottrell

Date: January 17, 1950

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Liquid Waste Disposal  
Week Ending January 8, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.69	1.04	2.73	8.72	4.03	12.75
Deviation from Last Week	+ 5.6%	- 10.3%	- 1.1%	+210.3%	+134.3%	+181.5%
Deviation from Previous 4 Weeks	- 2.3%	- 14.0%	- 7.1%	+ 73.4%	+ 56.8%	+ 67.8%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$1.0 \mu\text{c/cc} \times 10^{-7}$
Deviation From Last Week	+334.8%
Deviation From Previous 4 Weeks	+170.3%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>
This Week	0.092	0.094	0.186	0.013	0.015	0.028
Deviation from Last Week	+ 10.8%	- 15.3%	- 4.1%	+ 8.3%	+ 7.1%	+ 7.7%
Deviation from Previous 4 Weeks	- 8.9%	- 26.0%	- 18.4%	- 23.5%	-28.6%	- 26.3%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
<u>Date Week Ending</u>	<u>Conc. <math>\mu\text{g/cc} \times 10^{-9}</math></u>	<u>Total mg Plutonium</u>	<u>Conc. <math>\mu\text{g/cc} \times 10^{-9}</math></u>	<u>Total mg Plutonium</u>
1-8-50	0.9	0.018	1.46	0.733

*W. D. Cottrell*  
W. D. Cottrell

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Health Physics Division

Subjects: Liquid Waste Disposal, Week Ending January 15, 1950

Report No.: MOA-106-50

OAK RIDGE NATIONAL LABORATORY  
CENTRAL FILES NUMBER  
50-1-119

Authors: W. D. Cottrell

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Liquid Waste Disposal  
Week Ending January 15, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.83	0.88	2.71	9.51	4.42	13.93
Deviation from Last Week	+ 8.3%	- 15.4%	- 0.7%	+ 9.1%	+ 9.7%	+ 9.3%
Deviation from Previous 4 Weeks	+ 23.6%	- 6.4%	+ 12.0%	+ 43.2%	+ 35.2%	+ 40.6%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.9 \mu\text{c}/\text{cc} \times 10^{-7}$
Deviation From Last Week	- 10.0%
Deviation From Previous Four Weeks	+ 60.7%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	Beta mrep/hr	Gamma mr/hr	Total mr(ep)/hr	Beta mrep/hr	Gamma mr/hr	Total mr(ep)/hr
This Week	0.074	0.081	0.155	0.010	0.011	0.021
Deviation from Last Week	- 19.6%	- 13.8%	- 16.7%	- 23.1%	- 26.7%	- 25.0%
Deviation from Previous 4 Weeks	- 14.0%	- 16.5%	- 15.3%	- 23.1%	- 26.7%	- 25.0%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
Date Week Ending	Conc. $\mu\text{g/cc} \times 10^{-9}$	Total mg Plutonium	Conc. $\mu\text{g/cc} \times 10^{-9}$	Total mg Plutonium
1-15-50	3.5	0.07	1.6	1.14

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W. D. Cottrell

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Oak Ridge National Laboratory

Health Physics Division

Subject: Liquid Waste Disposal, Week Ending January 22, 1950

Report No.: MOA-107-50

OAK RIDGE NATIONAL LABORATORY  
CENTRAL FILES NUMBER  
50-1-152

Authors: W. D. Cottrell

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Liquid Waste Disposal  
Week Ending January 22, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	2.75	1.20	3.95	10.05	5.86	15.91
Deviation from Last Week	+ 50.3%	+ 36.4%	+ 45.8%	+ 5.7%	+ 32.6%	+ 14.2%
Deviation from Previous 4 Weeks	+ 68.7%	+ 16.5%	+ 48.5%	+ 41.7%	+ 63.7%	+ 49.1%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.8 \mu\text{c/cc} \times 10^{-7}$
Deviation From Last Week	- 11.1%
Deviation From Previous Four Weeks	+ 25.0%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Lake		
	Beta mrep/hr	Gamma mr/hr	Total mr(ep)/hr	Beta mrep/hr	Gamma mr/hr	Total mr(ep)/hr
This Week	0.165	0.119	0.284	0.007	0.010	0.017
Deviation from Last Week	+123.0%	+ 46.9%	+ 83.2%	- 30.0%	- 9.1%	- 19.0%
Deviation from Previous 4 Weeks	+101.2%	+ 20.2%	+ 57.0%	- 41.7%	- 28.6%	- 34.6%

## 4. Plutonium Discharged

	Settling Basin		White Oak Lake	
Date Week Ending	Conc. $\mu\text{g/cc} \times 10^{-9}$	Total mg Plutonium	Conc. $\mu\text{g/cc} \times 10^{-9}$	Total mg Plutonium
1-22-50	3.4	0.062	0.4	0.492

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Health Physics Division

50-2-18

Subjects: Liquid Waste Disposal, Week Ending January 29, 1950

Report No.: MOA-110-50

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Liquid Waste Disposal  
Week Ending January 29, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	5.60	2.08	7.68	5.53	3.08	8.61
Deviation from Last Week	+103.6%	+ 73.3%	+ 94.4%	- 45.0%	- 47.4%	- 45.9%
Deviation from Previous 4 Weeks	+184.3%	+ 94.4%	+152.6%	- 28.8%	- 23.2%	- 26.9%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.54 \mu\text{c/cc} \times 10^{-7}$
Deviation From Last Week	- 32.5%
Deviation From Previous Four Weeks	- 26.0%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin		White Oak Lake			
	Beta mrep/hr	Gamma mr/hr	Total mr(ep)/hr	Total mr(ep)/hr	Gamma mr/hr	Total mr(ep)/hr
This Week	2.60	0.225	0.485	0.015	0.020	0.035
Deviation from Last Week	+ 57.6%	+ 89.1%	+ 70.2%	+114.3%	+100.0%	+105.9%
Deviation from Previous 4 Weeks	+152.4%	+122.8%	+137.7%	+ 50.0%	+ 53.8%	+ 52.2%

## 4. Plutonium Discharged

	Settling Basin			
Date Week Ending	Conc. $\mu\text{g/cc} \times 10^{-9}$	Total mg Plutonium	Conc. $\mu\text{g/cc} \times 10^{-9}$	Total mg Plutonium
1-29-50	14.5	0.244	1.5	0.421

*W. D. Cottrell/KSS*  
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Health Physics Division

Subject: Liquid Waste Disposal, Week Ending February 5, 1950

Report No.: MOA-111-50

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Liquid Waste Disposal  
Week Ending February 5, 1950

A. Salient and Non-Routine Items

The great increase in the number of curies discharged from White Oak Dam during this period was due to a ten fold increase in the volume discharged, whereas there was only a three fold decrease in the specific activity of the discharge water. The flood of 1-30-50 through 2-2-50 swept a considerable quantity of radioactive silt from the bottom of the lake and carried it in suspension over the dam. Sufficient dilution was afforded by the Clinch River to give a probable average concentration in the Clinch below White Oak Dam less than the maximum permissible concentration for this stream.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	2.50	1.29	3.79	16.84	14.63	31.47
Deviation from Last Week	- 55.4%	- 38.0%	- 50.7%	+204.5%	+375.0%	+265.5%
Deviation from Previous 4 Weeks	- 15.8%	- 0.8%	- 11.2%	+ 99.3%	+236.3%	+145.9%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.88 \mu\text{c/cc} \times 10^{-7}$
Deviation From Last Week	+ 63.0%
Deviation From Previous Four Weeks	+ 8.6%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.121	0.128	0.249	0.006	0.007	0.013
Deviation from Last Week	- 53.5%	- 43.1%	- 48.7%	- 60.0%	- 65.0%	- 62.9%
Deviation from Previous 4 Weeks	- 18.2%	- 1.5%	- 10.4%	- 45.5%	- 50.0%	- 48.0%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
<u>Date</u> <u>Week Ending</u>	<u>Conc.</u> <u>ug/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>	<u>Conc.</u> <u>ug/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>
2-5-50	57.5	1.052	3.9	9.462

*W.D. Cottrell*  
W. D. Cottrell

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Health Physics Division

Subjects: Liquid Waste Disposal, Week Ending February 12, 1950

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CENTRAL FILES NUMBER  
50-2-103

Report No.: MOA-114-50

Authors: W. D. Cottrell

Date: February 20, 1950

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Liquid Waste Disposal  
Week Ending February 12, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	5.13	4.54	9.67	12.38	18.24	30.62
Deviation from Last Week	+105.2%	+251.9%	+155.1%	- 26.5%	+ 24.7%	- 2.7%
Deviation from Previous 4 Weeks	+ 61.8%	+233.8%	+113.5%	+ 18.1%	+160.6%	+ 75.2%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.76 \mu\text{c/cc} \times 10^{-7}$
Deviation From Last Week	- 13.6%
Deviation From Previous Four Weeks	- 2.6%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>
This Week	0.472	0.499	0.971	0.007	0.025	0.032
Deviation from Last Week	+290.1%	+289.8%	+290.0%	+ 16.7%	+257.1%	+146.2%
Deviation from Previous 4 Weeks	+204.5%	+261.6%	+231.4%	- 22.2%	+108.3%	+ 52.4%

## 4. Plutonium Discharged

	Settling Basin		White Oak Lake	
<u>Date</u> <u>Week Ending</u>	<u>Conc.</u> <u>ug/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>	<u>Conc.</u> <u>ug/cc x 10<sup>-9</sup></u>	<u>Total mg</u> <u>Plutonium</u>
2-12-50	197.8	3.264	5.6	7.996

*W. D. Cottrell*  
W. D. Cottrell

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Subject: Liquid Waste Disposal, Week Ending February 19, 1950

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50-3-11

Report No.: MOA-116-50

Author: W. D. Cottrell

Date: March 1, 1950

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Liquid Waste Disposal  
Week Ending February 19, 1950

A. Salient and Non-Routine Items

The amount of plutonium discharged from both the Settling Basin and White Oak Lake has increased steadily during the last four weeks. This increase was caused primarily by the reprocessing of wastes from the Redox Process in order to recover the plutonium. The condensate from a certain portion of this reprocessing was sent directly to the tank farm and then to the Settling Basin without going through the evaporator.

A contributing factor to the amount of plutonium discharged from White Oak Lake was the heavy rainfall during this period. Usually during periods of heavy rainfall, more activity is discharged from the lake than is discharged into it. This is due to the fact that some of the activity is scoured from the bottom of the lake and carried in suspension over the dam.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.64	1.21	2.85	2.86	1.93	4.79
Deviation from Last Week	- 68.0%	- 73.3%	- 70.5%	- 76.9%	- 89.4%	- 84.4%
Deviation from Previous 4 Weeks	- 59.0%	- 46.9%	- 54.6%	- 74.5%	- 81.5%	- 77.9%
Deviation from 1949 Weekly Ave.	- 91.7%	- 84.5%	- 89.7%	- 79.3%	- 79.4%	- 79.4%
Deviation of Curies discharged this year to date from the Curies discharged for the same period during 1949	- 91.7%	- 73.4%	- 88.9%	- 72.6%	- 71.5%	- 72.1%

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B. Statistical Data (cont'd)

## 2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.13 \times 10^{-7} \mu\text{c/cc}$
Deviation From Last Week	- 82.9%
Deviation From Previous Four Weeks Ave.	- 82.4%
Deviation From 1949 Weekly Ave.	- 96.2%

## 3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.107	0.126	0.233	0.007	0.015	0.022
Deviation From Last Week	- 77.3%	- 74.7%	- 76.0%	0.00%	- 40.0%	- 31.2%
Deviation From Previous 4 Weeks Ave.	- 57.9%	- 48.1%	- 53.1%	- 22.2%	0.00%	- 8.3%
Deviation From 1949 Weekly Ave.	- 92.4%	- 88.5%	- 90.7%	- 86.3%	- 64.3%	- 76.3%

## 4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	<u>Conc.</u> <u><math>\mu\text{g/cc} \times 10^{-9}</math></u>	<u>Total mg</u> <u>Plutonium</u>	<u>Conc.</u> <u><math>\mu\text{g/cc} \times 10^{-9}</math></u>	<u>Total mg</u> <u>Plutonium</u>
This Week	886.5	15.425	56.4	17.300
Deviation From Weekly Ave.	+ 2702.7%	+2100.4%	+657.7%	+2059.8%
During Period 8-21 - 12-31-49				

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Subject: Liquid Waste Disposal, Week Ending February 26, 1950

Report No.: MOA-120-50

OAK RIDGE NATIONAL LABORATORY  
CENTRAL FILES NUMBER  
50-3-24

Authors: W. D. Cottrell

Date: March 7, 1950

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Liquid Waste Disposal  
Week Ending February 26, 1950

A. Salient and Non-Routine Items

The relatively high plutonium content of the Settling Basin and White Oak Lake effluents this week is probably due to the residuum from the Reclamation Process in the 200 Area mentioned in last weeks report.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.89	1.49	3.38	1.45	1.43	2.88
Dev. from 1949 Weekly Average	- 90.4%	- 81.0%	- 87.7%	- 89.5%	- 84.8%	- 87.6%
Dev. of Curies Discharged this Year to Date from the Curies discharged for the Same Period during 1949	- 92.1%	- 73.9%	- 89.3%	- 75.3%	- 73.6%	- 74.6%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week  $0.07 \times 10^{-7} \mu\text{c/cc}$

Deviation from 1949 Weekly Average - 97.9%

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)hr</u>
This Week	0.141	0.142	0.283	0.009	0.017	0.026
Dev. from 1949 Weekly Average	-90.0%	- 87.1%	- 88.7%	- 82.4%	- 59.5%	- 72.0%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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B. Statistical Data (cont'd)

## 4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	Conc. <u>µg/cc x 10<sup>-9</sup></u>	Total mg <u>Plutonium</u>	Conc. <u>µg/cc x 10<sup>-9</sup></u>	Total mg <u>Plutonium</u>
This Week	314.2	5.970	15.4	1.783
Dev. from Weekly Ave. During Period 8-21 - 12-31-49	+893.4%	+751.6%	+107.0%	+122.6%

*W. D. Cottrell*  
W. D. Cottrell

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Subject: Liquid Waste Disposal, Week Ending March 5, 1950

Report No.: MOA-122-50

Author: W. D. Cottrell

Date: March 16, 1950

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Liquid Waste Disposal  
Week Ending March 5, 1950

A. Salient and Non-Routine Items

As has been stated previously, the plutonium content of the Settling Basin and White Oak Lake effluents has steadily increased during the last few weeks. In Report MOA-116-50 it was stated that this increase was caused by the condensate from a certain portion of the plutonium reclamation process being discharged into the tank farm and then directly into the Settling Basin. Upon further investigation it was found that this condensate was being sent directly to the Settling Basin without going through the tank farm. Further, it was learned that this condensate usually amounted to approximately forty gallons in volume and contained from one to 200 mg of plutonium in each forty gallon batch.

Arrangements have been made with members of the Technical Division to have this condition corrected before the next batch of wastes is processed. In the future this small volume of condensate will also be sent to the metal storage tanks and then to the liquid waste evaporator before being discharged into the Settling Basin.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.50	1.41	2.91	3.63	1.74	5.37
Dev. From 1949 Weekly Average	- 92.4%	- 82.0%	- 89.4%	- 73.7%	- 81.5%	- 76.9%
Dev. of Curies Discharged this Year to Date From the Curies Discharged for the Same Period During 1949	- 91.6%	- 71.3%	- 88.5%	- 75.1%	- 73.7%	- 74.5%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.29 \times 10^{-7} \mu\text{c/cc}$
Deviation From 1949 Weekly Average	- 91.5%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

3. Submersion Data

	Settling Basin			White Oak Lake		
	Beta mrep/hr	Gamma mr/hr	Total mr(ep)/hr	Beta mrep/hr	Gamma mr/hr	Total mr(ep)/hr
This Week	0.136	0.135	0.271	0.010	0.013	0.023
Dev. From 1949						
Weekly Average	- 90.3%	- 87.7%	- 89.2%	- 80.4%	- 69.0%	- 75.3%

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	Conc. <u>ug/cc x 10<sup>-9</sup></u>	Total mg <u>Plutonium</u>	Conc. <u>ug/cc x 10<sup>-9</sup></u>	Total mg <u>Plutonium</u>
This Week	1228.4	23.340	123.1	36.016
Dev. From Weekly				
Ave. During Period				
8-21-49 - 12-31-49	+3787.3%	+3229.5%	+1563.5%	+4396.4%

*W. D. Cottrell*  
W. D. Cottrell

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Health Physics Division

Subject: Liquid Waste Disposal, Week Ending March 19, 1950

Report No.: MOA-127-50

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CENTRAL FILES NUMBER  
**50-8-155**

Author: W. D. Cottrell

Date: March 28, 1950

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Liquid Waste Disposal  
Week Ending March 19, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.35	1.18	2.53	6.63	5.08	11.71
Dev. from 1949						
Weekly Average	- 93.2%	- 84.9%	- 90.8%	- 52.0%	- 45.9%	- 49.5%
Dev. of Curies Discharged this Year to Date from the Curies Discharged for the Same Period During 1949	- 92.4%	- 76.8%	- 89.8%	- 75.2%	- 77.7%	- 76.3%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$1.30 \times 10^{-7} \mu\text{c/cc}$
Dev. from 1949 Weekly Average	- 61.8%

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.096	0.111	0.207	0.010	0.016	0.026
Dev. from 1949						
Weekly Average	- 93.2%	- 89.9%	- 91.7%	- 80.4%	- 61.9%	- 72.0%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	Conc. <u>ug/cc x 10<sup>-9</sup></u>	Total mg <u>Plutonium</u>	Conc. <u>ug/cc x 10<sup>-9</sup></u>	Total mg <u>Plutonium</u>
This Week	322.1	6.216	37.0	27.821
Dev. from 1949				
Weekly Average	+919.3%	+786.7%	+400.0%	+3373.3%

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W. D. Cottrell

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50-8-177

Subject: Liquid Waste Disposal, Week Ending March 26, 1950

Report No.: MOA-131-50

Authors: W. D. Cottrell

Date: March 31, 1950


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Liquid Waste Disposal  
Week Ending March 26, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.73	1.27	3.00	2.95	2.10	5.05
Dev. from 1949 Weekly Average	- 91.2%	- 83.8%	- 89.1%	- 78.6%	- 77.6%	- 78.2%
Dev. of Curies Discharged this Year to Date from the Curies Discharged for the Same Period During 1949	- 92.5%	- 78.7%	- 90.0%	- 76.6%	- 81.4%	- 79.0%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$1.97 \times 10^{-7} \mu\text{c/cc}$
Deviation from 1949 Weekly Average	- 42.0%

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>
This Week	0.109	0.140	0.249	0.011	0.019	0.030
Dev. from 1949 Weekly Average	- 92.2%	- 87.2%	- 90.0%	- 78.4%	- 54.8%	- 67.7%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	Conc. <u><math>\times 10^{-9}</math> <math>\mu\text{g}/\text{cc}</math></u>	Total mg <u>Plutonium</u>	Conc. <u><math>\times 10^{-9}</math> <math>\mu\text{g}/\text{cc}</math></u>	Total mg <u>Plutonium</u>
This Week	653.0	11.885	84.2	17.848
Dev. from Weekly Ave. During Period 8-21-49 - 12-31-49	+1966.5%	+1595.4%	+1037.8%	+2128.2%

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W. D. Cottrell

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Subject: Liquid Waste Disposal, Week Ending April 2, 1950

Report No.: MOA-133-50

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50-4-60

Author: W. D. Cottrell

Date: April 12, 1950

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Liquid Waste Disposal  
Week Ending April 2, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	3.24	3.15	6.39	3.88	3.68	7.56
Dev. from 1949						
Weekly Average	- 83.6%	- 59.8%	- 76.8%	- 71.9%	- 60.8%	- 67.4%
Dev. of Curies Discharged this Year to Date from the Curies Discharged for the Same Period						
During 1949	- 92.5%	- 79.4%	- 89.9%	- 77.8%	- 82.1%	- 79.9%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$2.76 \times 10^{-7}$ $\mu\text{c/cc}$
Deviation from 1949 Weekly Average	- 18.8%

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.168	0.255	0.423	0.010	0.023	0.033
Dev. from 1949						
Weekly Average	-88.0%	- 76.8%	- 83.1%	- 80.4%	- 45.2%	- 64.5%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	Conc. <u><math>\times 10^{-9}</math> <math>\mu\text{g/cc}</math></u>	Total mg <u>Plutonium</u>	Conc. <u><math>\times 10^{-9}</math> <math>\mu\text{g/cc}</math></u>	Total mg <u>Plutonium</u>
This Week	298.1	6.707	76.57	21.838
Dev. from Weekly Ave. During Period				
8-21-49 - 12-31-49	+842.5%	+856.8%	+929.2%	+2626.3%

*W.D. Cottrell / RYS.*  
W. D. Cottrell

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Oak Ridge National Laboratory

Health Physics Division

Subject: Liquid Waste Disposal, Week Ending April 9, 1950

Report No.: MCA-136-50

ORNL  
CENTRAL FILES NUMBER  
50-4-61

Authors: W. D. Cottrell

Date: April 14, 1950


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Liquid Waste Disposal  
Week Ending April 9, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	2.24	2.12	4.36	0.65	1.04	1.69
Dev. from 1949						
Weekly Average	- 88.6%	- 72.9%	- 84.2%	- 95.3%	- 88.9%	- 92.7%
Dev. of Curies Discharged this Year to Date from the Curies Discharged for the Same Period During 1949	- 92.5%	- 80.1%	- 90.0%	- 78.7%	- 82.9%	- 80.5%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.38 \times 10^{-7} \mu\text{c/cc}$
Deviation from 1949 Weekly Average	- 88.8%

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.170	0.222	0.392	0.009	0.027	0.036
Dev. from 1949						
Weekly Average	- 87.9%	- 79.8%	- 84.3%	- 82.4%	- 35.7%	- 61.3%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River

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B. Statistical Data (cont'd)4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	Conc. $\times 10^{-9}$ $\mu\text{g/cc}$	Total mg Plutonium	Conc. $\times 10^{-9}$ $\mu\text{g/cc}$	Total mg Plutonium
This Week	1308.9	22.644	13.2	0.832
Dev. from Weekly Ave. During Period				
8-21-49 - 12-31-49	+4038.1%	+3130.2%	+ 77.4%	+ 3.9%

*W. D. Cottrell*  
W. D. Cottrell

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Health Physics Division

Subject: Liquid Waste Disposal, Week Ending April 16, 1950

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CENTRAL FILES NUMBER  
50-4-119

Report No.: MOA-142-50

Author: W. D. Cottrell

Date: April 25, 1950


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Liquid Waste Disposal  
Week Ending April 16, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.95	2.14	4.09	1.02	1.01	2.03
Dev. from 1949 Weekly Average	- 90.1%	- 72.7%	- 85.2%	- 92.6%	- 89.2%	- 91.2%
Dev. of Curies Discharged this Year to Date from the Curies Discharged for the Same Period During 1949	- 92.7%	- 81.0%	- 90.2%	- 79.6%	- 82.7%	- 81.1%

2. Probable Average Concentration in Clinch River below White Oak Creek\*

This Week	$0.25 \times 10^{-7} \mu\text{c/cc}$
Deviation from 1949 Weekly Average	- 92.6%

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.169	0.258	0.427	0.009	0.020	0.029
Dev. from 1949 Weekly Average	- 88.0%	- 76.5%	- 82.9%	- 82.4%	- 52.4%	- 68.8%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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Liquid Waste Disposal

Page 3

B. Statistical Data (cont'd)

4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	Conc. $\times 10^{-9}$ $\mu\text{g/cc}$	Total mg Plutonium	Conc. $\times 10^{-9}$ $\mu\text{g/cc}$	Total mg Plutonium
This Week	307.5	4.612	22.0	2.137
Dev. from Weekly Ave. During Period				
8-21-49 - 12-31-49	+872.2%	+557.9%	+195.7%	+166.8%

W. D. Cottrell *R.H.L.*  
W. D. Cottrell

RGLawlersac

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Oak Ridge National Laboratory

Health Physics Division

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CENTRAL FILE NUMBER

50-5- 76

Subject: Liquid Waste Disposal, Week Ending April 30, 1950

Report No.: MOA-146-50

Authors: W. D. Cottrell

Date: May 11, 1950

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2  
Liquid Waste Disposal  
Week Ending April 30, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	2.14	2.05	4.19	**	**	**
Dev. from 1949						
Weekly Average	- 89.2%	- 73.8%	- 84.9%	**	**	**
Dev. of Curies Discharged this Year to Date from the Curies Discharged for the Same Period During 1949	- 92.4%	- 79.7%	- 89.5%	**	**	**

2. Probable Average Concentration in Clinch River below White Oak Creek\*

This Week \*\*

Deviation from 1949 Weekly Average \*\*

3. Submersion Data

	Settling Basin			White Oak Lake***		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.203	0.251	0.454	0.017	0.021	0.038
Dev. from 1949						
Weekly Average	- 85.6%	- 77.1%	- 81.9%	-66.7%	- 50.0%	- 59.1%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

\*\*There was no discharge from White Oak Lake this Week.

\*\*\*The submersion data for White Oak Lake is based on samples collected behind the closed gate.

B. Statistical Data (cont'd)

## 4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	Conc. $\times 10^{-9}$ $\mu\text{g}/\text{cc}$	Total mg Plutonium	Conc. $\times 10^{-9}$ $\mu\text{g}/\text{cc}$	Total mg Plutonium
This Week	657.0	9.724	49.78	****
Dev. from Weekly Average During Period 8-21 - 12-31-49	$\pm 1977.1$	$\pm 1287.2\%$	$\pm 569.1\%$	****

*W. D. Cottrell*  
W. D. Cottrell

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\*\*\*\*The plutonium conc. for White Oak Lake is based on samples collected behind the closed gate. There was no discharge from White Oak Lake this week.

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Health Physics Division

Subject: Liquid Waste Disposal, Week Ending May 7, 1950

Report No.: MOA-149-50

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CENTRAL FILES NUMBER  
50-5-115

Author: W. D. Cottrell

Date: May 18, 1950

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Liquid Waste Disposal  
Week Ending May 7, 1950

A. Salient and Non-Routine Items

The plutonium content of the Settling Basin effluent was unusually high this week, although investigation indicates that no abnormal or unusual operations were carried out during this period. The wastes from various phases of the process in Bldg. 205, as well as the wastes in tanks W-1 and W-2 in the Tank Farm, are being analyzed in an effort to determine the specific source of this contamination.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.12	1.39	2.51	0.54	0.28	0.82
Dev. from 1949 Weekly Average	- 94.3%	- 82.2%	- 90.9%	- 96.1%	- 97.0%	- 96.5%
Dev. of Curies Discharged this Year to Date from the Curies Discharged for the Same Period During 1949	- 92.6%	- 80.4%	- 89.8%	- 81.8%	- 83.7%	- 82.7%

2. Probable Average Concentration in Clinch River below White Oak Creek\*

This Week	$0.16 \times 10^{-7} \mu\text{c/cc}$
Deviation from 1949 Weekly Average	- 95.3%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River

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B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>
This Week	0.126	0.183	0.309	0.013	0.014	0.027
Dev. from 1949						
Weekly Average	- 91.0%	- 83.3%	- 87.7%	- 74.5%	- 66.7%	- 71.0%

## 4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	<u>Conc. 10<sup>-9</sup> <math>\mu</math>g/cc</u>	<u>Total mg Plutonium</u>	<u>Conc. 10<sup>-9</sup> <math>\mu</math>g/cc</u>	<u>Total mg Plutonium</u>
This Week	5713.0	78.839	26.79	0.964
Dev. from Weekly				
Ave. During Period				
8-21-49 - 12-31-49	+17962.0%	+11146.6%	+260.1%	+20.3%

*W. D. Cottrell*  
W. D. Cottrell

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Health Physics Division

Subject: Liquid Waste Disposal, Week Ending May 14, 1950

Report No.: MOA-153-50

ORNL  
CENTRAL FILES NUMBER  
50-5-155

Author: W. D. Cottrell



Date: May 24, 1950


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Liquid Waste Disposal  
Week Ending May 14, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.24	1.55	2.79	5.44	3.85	9.29
Dev. from 1949						
Weekly Average	- 93.7%	- 80.2%	- 89.9%	- 60.6%	- 59.0%	- 60.0%
Dev. of Curies Discharged this Year to Date from the Curies Discharged for the Same Period During 1949	- 92.8%	- 81.0%	- 90.1%	- 81.3%	- 83.1%	- 82.2%

2. Probable Average Concentration in Clinch River below White Oak Creek\*

This Week	$1.36 \times 10^{-7}$ $\mu\text{c/cc}$
Deviation from 1949 Weekly Average	- 60.0%

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.155	0.172	0.327	0.008	0.013	0.021
Dev. from 1949						
Weekly Average	- 89.0%	- 84.3%	- 86.9%	- 84.3%	- 69.0%	- 77.4%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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B. Statistical Data (cont'd)

## 4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	Conc. 10 <sup>-9</sup> $\mu$ g/cc	Total mg Plutonium	Conc. 10 <sup>-9</sup> $\mu$ g/cc	Total mg Plutonium
This Week	1156.7	18.970	52.0	29.026
Dev. from Weekly Ave. During Period				
8-21-49 - 12-31-49	+3556.9%	+2606.1%	+598.9%	+3523.7%

*W. D. Cottrell*  
W. D. Cottrell

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Subject: Liquid Waste Disposal, Week Ending May 21, 1950

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Report No.: MOA-154-50

50-5- 170

Author: W. D. Cottrell

Date: May 31, 1950

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Liquid Waste Disposal  
Week Ending May 21, 1950

A. Salient and Non-Routine Items

The plutonium content of both the Settling Basin and White Oak Lake effluents is relatively high again this week. As of May 19, 1950 all wastes from the tank farm are being decontaminated by means of the liquid waste evaporator before being discharged into the Settling Basin. Previous to this date tanks W-1 and W-2 were decontaminated only when the gross  $\beta$  activity reached a certain level. It is hoped that this action will eliminate a major portion of the plutonium contamination found in the Settling Basin and White Oak Lake effluents in the past.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	1.34	3.33	4.67	1.97	3.83	5.80
Dev. from 1949 Weekly Average	- 93.2%	- 57.5%	- 83.1%	- 85.7%	- 59.2%	- 75.0%
Dev. of Curies Discharged this Year to Date from the Curies Discharged for the Same Period During 1949	- 93.2%	- 83.2%	- 90.6%	- 81.2%	- 82.3%	- 81.7%

2. Probable Average Concentration in Clinch River Below White Oak Creek\*

This Week	$0.81 \times 10^{-7}$ uc/cc
Deviation from 1949 Weekly Average	- 76.2%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

B. Statistical Data (cont'd)

## 3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>	<u>Beta mrep/hr</u>	<u>Gamma mr/hr</u>	<u>Total mr(ep)/hr</u>
This Week	0.330	0.300	0.630	0.003	0.016	0.019
Dev. from 1949						
Weekly Average	- 76.5%	- 72.7%	- 74.8%	- 94.1%	- 61.9%	- 79.6%

## 4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	<u>Conc. 10<sup>-9</sup> <math>\mu</math>g/cc</u>	<u>Total mg Plutonium</u>	<u>Conc. 10<sup>-9</sup> <math>\mu</math>g/cc</u>	<u>Total mg Plutonium</u>
This Week	4076.1	82.337	50.7	22.131
Dev. from Weekly				
Ave. During Period				
8-21-49 - 12-31-49	+12786.8%	+11645.6%	+581.5%	+2662.9%

WDC:sac

*W. D. Cottrell*  
W. D. Cottrell~~RESTRICTED DATA~~~~SECRET~~~~CAUTION~~

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Oak Ridge National Laboratory

Health Physics Division

Subjects: Liquid Waste Disposal, Week Ending May 28, 1950

Report No.: MOA-159-50

ORNL  
CENTRAL FILES NUMBER  
50-6-51

Authors: W. D. Cottrell

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Date: June 8, 1950

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Liquid Waste Disposal  
Week Ending May 28, 1950

A. Salient and Non-Routine Items

In a further effort to reduce the plutonium contamination of the Settling Basin effluent the water and hexone from the final separator tank in Cell 3, Bldg. 205, are being rerouted to the metal wastes tank in the tank farm. These wastes, which previously went directly to the Settling Basin via the process drain, were found to contain significant amounts of plutonium.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	21.07	8.00	29.07	2.20	1.01	3.21
Dev. from 1949 Weekly Average	- 6.79%	- 2.17%	- 5.48%	- 84.06%	-89.24%	-86.16%
Dev. of Curies Discharged this Year to Date from the Curies Discharged for the Same Period During 1949	- 90.27%	- 80.50%	- 87.72%	- 81.01%	-82.17%	-81.54%

2. Probable average concentration in Clinch River below White Oak Creek\*

This Week	$1.55 \times 10^{-7} \mu\text{c/cc}$
Deviation from 1949 Weekly Average	- 54.41%

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.949	0.666	1.615	0.027	0.026	0.053
Dev. from 1949 Weekly Average	-32.45%	-39.34%	-35.48%	-47.05%	-38.09%	-43.01%

\* Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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B. Statistical Data (cont'd)

## 4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	Conc. <u>10<sup>-9</sup> ug/cc</u>	Total mg <u>Plutonium</u>	Conc. <u>10<sup>-9</sup> ug/cc</u>	Total mg <u>Plutonium</u>
This Week	7809.7	170.055	110.5	7.602
Dev. from Weekly Ave. During Period 8-21-49 - 12-31-49	+24590.8%	+24158.9%	+1385.2%	+849.1%

*W. D. Cottrell*  
W. D. Cottrell

WDC:ac

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Oak Ridge National Laboratory

Health Physics Division

Subject: Liquid Waste Disposal, Week Ending June 4, 1950

ORNL  
CENTRAL FILES NUMBER

Report No.: MOA-146-50

50-6-75

Author: H. H. Abbe

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Date: June 11, 1950

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Liquid Waste Disposal  
Week Ending June 4, 1950

A. Salient and Non-Routine Items

Normal routine work.

B. Statistical Data

1. Curies Discharged

	Settling Basin			White Oak Lake		
	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>	<u>Beta</u>	<u>Gamma</u>	<u>Total</u>
This Week	6.23	2.31	8.54	4.41	0.61	5.02
Dev. from 1949						
Weekly Average	-68.4%	-70.5%	-69.0%	-68.1%	-93.5%	-78.4%
Dev. of Curies						
Discharged this						
Year to Date from						
the Curies Discharged						
for the Same Period						
During 1949	-89.6%	-80.3%	-87.2%	-80.4%	-82.0%	-81.2%

2. Probable Average Concentration in Clinch River below White Oak Creek\*

This Week	✓ 0.98 x 10 <sup>-7</sup> $\mu\text{c/cc}$
Deviation from 1949 Weekly Average	-71.2%

3. Submersion Data

	Settling Basin			White Oak Lake		
	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>	<u>Beta</u> <u>mrep/hr</u>	<u>Gamma</u> <u>mr/hr</u>	<u>Total</u> <u>mr(ep)/hr</u>
This Week	0.352	0.223	0.575	0.048	0.016	0.064
Dev. from 1949						
Weekly Average	-74.9%	-79.7%	-77.0%	-5.9%	-61.9%	-31.2%

\*Calculated using as a dilution factor the ratio of White Oak Lake discharge to the flow of Clinch River.

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B. Statistical Data (cont'd)

## 4. Plutonium Discharged

	Settling Basin		White Oak Lake	
	Conc. <u>10<sup>-9</sup> ug/cc</u>	Total mg <u>Plutonium</u>	Conc. <u>10<sup>-9</sup> ug/cc</u>	Total mg <u>Plutonium</u>
This Week	1795.0	33.746	58.4 ✓	4.170
Dev. from Weekly Average During Period				
8-21-49 - 12-31-49	+5575.0%	+4714.0%	+684.9%	+420.6%

*H. H. Abee*

H. H. Abee

HHA:sac

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